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INDEPENDENT EVALUATION PLAN (IEP) FOR SEALED NICKEL-CADMIUM (NI--ETC(U)
SEP 82

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DEPARTMENT OF THE ARMY
UNITED STATES ARMY LOGISTICS CENTER
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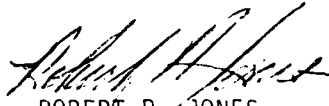
SUBJECT: Operational Concept for Sealed Nickel-Cadmium (NICAD) Battery Support

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1. Reference: USALOGC letter ATCL-ME, 10 Aug 82, SAB with 1st Indorsement, HQ, USACAC, ATZL-CAT-EF, 31 Aug 82.
2. The inclosed Independant Evaluation Plan (IEP) for the Operational Concept for sealed Nickel-Cadmium (NICAD) Battery Support was approved by USACAC in the 1st Indorsement to referenced letter. It is provided for your information.
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INDEPENDENT EVALUATION PLAN
(IEP)

for

SEALED NICKEL-CADMIUM (NICAD)
BATTERY SUPPORT

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1.0. GENERAL.

1.1. Purpose. To evaluate the proposed operational concept (POC) for charging sealed NICAD batteries which require a battery charging station assigned to each forward support company of the division maintenance battalion. Charging capabilities will be provided by a Configuration I charging station and charging teams from the forward support company. Evaluation results will be utilized by TRADOC and HQDA to finalize the Army's concept/doctrine for recharging sealed NICAD batteries.

1.2. Background.

a. In November 1977 a Joint Working Group (JWG) session was conducted with representatives from DARCOM, TRADOC, DA DCSOOG and USALOGC, to discuss and determine course(s) of action to provide NICAD battery support for the Army in the field. By letter, ATCD-S-L, HQ TRADOC, 5 Dec 78, subject: Basis of Issue for Battery Charger PP-7286/U, the USALOGC was tasked to develop a maintenance concept for NICAD batteries resulting from the output of the November 1977 JWG.

b. In January 1979 the USALOGC forwarded the initial draft of developed proposed NICAD maintenance concept worldwide for review and comments. In May 79 another JWG meeting was conducted with representatives from the MACOMs, DA, and TRADOC to discuss and resolve comments received from the initial draft concept distribution Jan 79 and to prepare a final draft concept.

c. In June 1979 a POC for sealed NICAD battery support was forwarded to HQ TRADOC for approval. In Aug 79 this concept was approved by HQ TRADOC and forwarded to HQDA for immediate implementation. Copy of POC is contained

Appendix A.

d. In Nov 79 and Feb 81, HWDA, DAMO-RQD, provided the following comments on the POC:

(1) There are disadvantages associated with recharging batteries at the brigade level and at the battalion level. However, HQDA is concerned over the feasibility of daily retrograding, processing, DXing, redistributing, and recharging the large volume of batteries from maneuver battalions in a responsive and effective manner.

(2) HQDA recognizes the capability of the PP-7286, universal battery charger, to charge a variety of NICAD batteries. A description of PP-7286/U is provided at Appendix B. However, one concern is the ability of the PP-7286/U to charge the volume and diversity of type batteries under combat conditions utilizing the POC.

(3) In view of the data in (1) and (2) above the POC was conditionally approved pending completion of a successful test in a field environment by a brigade and those units which habitually support the brigade within its area of operations to include a direct support field artillery battalion. Furthermore,

(a) Testing should be added to another planned brigade test or field exercise to minimize cost and expedite testing completion.

(b) Testing should fully examine the POC approach for charging at brigade level. In addition, the feasibility of charging by teams from the forward support company attached to maneuver and FA battalion(s) in the brigade area should also be tested and results compared.

1.3. Test Objectives were (1).

a. ^y To evaluate the POC and direct exchange procedures to provide responsive and effective battery support under combat conditions.

b. To evaluate whether or not the PP-7286/U battery charger can charge the volume and diversity of type batteries under conditions utilizing the POC and established direct exchange procedures.

1.4. Scope and Tactical Context.

a. Scope.

(1) General:

(a) This test will be conducted in two phases; phase I will be conducted utilizing a Configuration I charging station located in the brigade area. Maneuver/field artillery units of the brigade task force will retrograde daily discharged NICAD batteries to the brigade charging station. The brigade charging station will operate in the same manner as a Class IX Direct Exchange (DX) point. Unserviceable batteries will be exchanged for recharged batteries using DA Form 2402. Batteries will normally be transported to and from the charging station by the using unit's resupply vehicle. Phase II will be a forward support company charging team deployed from the brigade area, and employed at the maneuver or field artillery unit's trains area. Same DX operating procedures will be utilized in Phase II as described in Phase I, but only for a battalion size unit.

(b) A brigade size task force will be required to employ in a mission type engagement that will require utilization of equipment that is powered by NICAD batteries. Through the utilization of this equipment, and since the NICAD battery is unable to retain an acceptable charge for a long period of time, the extended use of the electronic hardware during operation (combat) will be required.

(c) Number of chargers assigned to test forward support maintenance company will be as designated in USAFAS message, ATSE-CD-MS, 271431Z Feb 81, copy at Appendix C, rather than the quantity identified in the POC.

(d) NICAD battery powered electronic hardware requiring NICAD charging support for subject test will be:

1. DMD - Digital Message Device (TACFIRE)
2. GVS-5 - Laser Infrared Observation Device
3. GLLD - Ground Laser Locator Designator
4. TAS-4 - TOW/DRAGON etc.

(2) Phases.

(a) Phase I (Brigade). During this phase a Configuration I charging station will be employed to support the NICAD battery powered electronic hardware while being employed in its TO&E mission. To create an adequate base to assess the capability of the charging system, the brigade will require utilization of selected electronic equipment for a minimum of 72 hours. The brigade size unit should consist of a minimum of three maneuver battalions to include a field artillery battalion.

(b) Phase II (Battalion). This phase will require a maneuver battalion, which has a FIST mission, to deploy in a TOE type mission utilizing electronic hardware. Upon discharging of the NICAD battery, the unit will retrograde the expended batteries to a battalion charging station for exchange and recharging. The battalion charging capability will be in the form of a charging team provided the battalion by the supporting forward support maintenance company. Results of this phase will be compared against data collected in Phase I.

(3) The environmental and energy impacts of this test are not considered to be significant.

b. Tactical Context. It is desired that this test be added to another planned brigade/^{battalion}size exercise in which will require utilization of electronic equipment which is powered by NICAD batteries. There is no requirement for a

directed scenario, or special requirements other than a brigade/battalion size task force employing electronic equipment powered by NICAD batteries.

2.0. ISSUES.

2.1. General. Issues contained in this paragraph are directly related and supportive of the critical issues in paragraph 1.3., with issues specified for each phase of testing.

2.2. Phase I (Brigade).

* 2.2.1. Issue. How much time is required to charge NICAD batteries for each item of equipment identified in par 1.4a(1)(d) by a Configuration I charging station?

2.2.1.1. Scope. This issue will require that a Configuration I charging station augmented with a charging team become operational in the brigade area, and charge each of the batteries individually to collect specific times by type battery. After collecting time data for specific batteries, the Configuration I station will perform mission operations in support of brigade operations.

2.2.1.2. Criteria. For each type battery associated with equipment listed in para 1.4a(1)(d) there is a charging time chart for each based upon ambient temperature charging criteria by battery, by ambient temperature is:

<u>Battery</u>	<u>14⁰F to 39⁰F</u>	<u>40⁰F to 100⁰F</u>
BB-503/TAS	265mA for 30 hours	530mA for 15 hours
BB-516/U	15mA for 12 hours	30mA for 6 hours
BB-557/U	50mA for 12 hours	100mA for 6 hours
BB-704/U	300mA for 19 hours	700mA for 7 hours

2.2.1.3. Rationale. POC for sealed NICAD battery support has been conditionally approved by HQDA. One of the major concerns was that of location and operations of a Configuration I charging station, and would the POC be responsive to the

needs of the supported units. There are disadvantages associated with recharging batteries at the brigade level. Major concern being the capability of the charging station to recharge the volume of batteries of the brigade in a responsive and effective manner.

- * 2.2.2. Issue. Can the Configuration I charging station provide operational batteries utilizing Class IX direct exchange procedures?

2.2.2.1 Scope. This issue will require an examination of DX procedures, as outlined in the POC, to see if the Configuration I charging station can maintain the brigade equipment assets in an operational status. Assessing the output of the Configuration I charging in a field environment will provide quantitative data and insights with which to evaluate battery exchange procedures. Data from test insights will assist in determining the quantity, by type, of batteries required to maintain a continuous DX flow of batteries.

2.2.2.2. Criteria. Configuration I charging station should provide a 95 percent dependability of resupplying brigade requirements for charged NICAD batteries, and maintain a one day supply of batteries for exchange.

2.2.2.3. Rationale. DX procedures were developed and approved as the recommended procedure for exchanging batteries between users and supporters. However, HQDA is concerned regarding the impact and feasibility of daily retrograding, processing, DXing and redistributing of NICAD batteries. This issue should provide objective comments and observations regarding the charging station's impact, if any, on maneuver unit's capability to operate equipment requiring recharged NICAD batteries.

2.2.3. Issue. Can the Configuration I charging station maintain an adequate stock rotation plan for charged NICAD batteries?

2.2.3.1. Scope. An examination will be made of the charging station's capability to maintain control of charged batteries for DX.

2.2.3.2. Criteria. POC states that adequate quality control will be exercised to insure 95 percent dependability of resupplied batteries.

2.2.3.3. Rationale. Sealed NICAD batteries are considered as expendable; however, a discharged battery must be turned in or exchanged to receive a charged battery.

2.2.4. Issue. Can the forward support company maintain the PP-7286/U in an operational status utilizing the interim support plan?

2.2.4.1. Scope. Logistics support planned for the PP-7286/U will comprise of two phases, an interim and final plan. The interim plan includes Army technical manuals, and positioning of sufficient float stock. The final plan providing for full Army ILS, including a DA technical manual. Interim plan will be effective until 3d Qtr FY 81, at which time the final plan will be implemented. This issue will be evaluated against the criteria specified in para 2.2.4.2. below.

2.2.4.2. Criteria. (Interim Maintenance Support Plan)

a. Maintenance.

(1) Operator Maintenance: The operator performs preventive maintenance services including visual inspection, cleaning, and operational checks.

(2) Organizational Maintenance: Organizational Maintenance personnel performs preventive maintenance checks as required. Repair will be limited to replacement of fuses, lamps and the internal memory battery (B1).

(3) Direct Support (DS) and General Support (GS) Maintenance: Direct and general support maintenance personnel will troubleshoot and repair by tightening loose connections, adjustment of dial settings and meters, etc. Major repairs will be accomplished by direct exchange for float stock during the interim period.

b. Supply. The using activities will requisition replacement units on a DX basis from the major supply support command. The supply support command will release from Tobyhanna Depot those stocked assets for replenishment of the depleted unit float at no cost to the user except the normal shipping charges.

2.2.4.3. Rationale. The maintenance concept for the PP-7286/U has been developed to cover the conditional (Interim) and full release (final plan) phases of the fielding of the PP-7286/U. The interim phase covers the conditional release period and logistics support will be as specified in 2.2.4.2. above.

2.3. Phase II (Battalion)

- * 2.3.1. Issue. Can the charging team from the forward support company employed in the maneuver battalion field trains area provide the required charged batteries to the supported units?

2.3.1.1. Scope. This issue includes the examination of the performance capability of a charging team provided to maneuver battalion by the forward support company. The charging team will operate in the supported battalion's field trains area. Units of the battalion requiring NICAD battery support will utilize the support team rather than utilizing the brigade charging station.

2.3.1.2. Criteria. Assessment of the charging teams will be made based upon judgmental observation of the team's capability to perform the charging requirement of the maneuver battalion.

2.3.1.3. Rationale. In order to fully evaluate all alternatives for providing charging support for sealed NICAD batteries, the question has arose; is it reasonable to charge all brigade batteries at a brigade charging station, or

should the forward support maintenance company provide charging teams to maneuver battalion? This issue is to provide insights into advantages and disadvantages of having charging teams located in maneuver unit's field trains area.

- * 2.3.2. Issue. Can the forward support maintenance charging team provide operational batteries utilizing Class IX direct exchange procedures?

2.3.2.1. Scope. This issue will provide data in which to evaluate the operating restrictions, if any, on the charging team in the implementation of Class IX DX procedures.

2.3.2.2. Criteria. Charging team should provide a 95 percent dependability of resupplying battalion requirements for charged NICAD batteries, and maintain a one day supply of batteries for exchange.

2.3.2.3. Rationale. DX procedures were developed and approved as the recommended procedure for exchanging batteries between users and supporters. However, HQDA is concerned regarding the impact and feasibility of daily retrograding, processing, DXing and redistributing of NICAD batteries. This issue should provide objective comments and observations regarding the charging station's impact, if any, on maneuver unit's capability to operate equipment requiring recharged NICAD batteries. Also, the DX facility/charging station will be required to establish inventory control procedures and maintain demand controlled stockage levels.

- * 2.3.3. Issue. Will the frequent movement of battalions and field trains impact upon the charging team's mission?

2.3.3.1. Scope. This issue addresses the charging team's capability to maintain unit workload requirements when subjected to frequent movement.

2.3.3.2. Criteria. There are no standard criteria for this issue and subjective comments will be provided based upon military judgment and existing professional assessment.

2.3.3.2. Rationale. With the charging team organic to maneuver units, they will be subjected to more frequent moves than the charging team at brigade. With the increased frequency of moves, the charging team that has batteries less than fully charged, will have to totally recharge the batteries, thus reducing the output capability of the charging teams.

2.4. Mission Performance - Phase I and Phase II.

- * 2.4.1. Issue. What impact will fluctuation of temperature have on the ability of the charging station and charging teams to accomplish their missions?

2.4.1.1. Scope. Charging of sealed NICAD batteries must be performed in a temperature controlled environment for best charging results. Temperatures should not fall below 40°F or rise above 90°F.

2.4.1.2. Criteria. For each type battery associated with equipment listed in para 1.4a(1)(d) there is a charging time chart for each based upon ambient temperature charging criteria by battery, by ambient temperature is:

<u>Battery</u>	<u>14°F to 39°F</u>	<u>40°F to 100°F</u>
BB-503/TAS	265mA for 30 hours	530mA for 15 hours
BB-516/U	15mA for 12 hours	30mA for 6 hours
BB-557/U	50mA for 12 hours	100mA for 6 hours
BB-704/U	300mA for 19 hours	700mA for 7 hours

2.4.1.3. Rationale. It is recognized there were limited quantities of the properly configured support equipment when the test was directed. The POC was developed based upon employment of charging stations being "housed" in an S-280 shelter with heater, air conditioner, etc. In all probability, the S-280 shelters will not be available which will require utilization of prototype equipment, or some other means. With utilization of prototype or other type support equipment, recharging capability will be affected by the temperature and this degradation should be documented. Based upon this test limitation, objective comments should be provided for this issue so that mission impacts can be assessed.

3.0. CONCEPT OF EVALUATION.

3.1. The operational concept for sealed nickel-cadmium (NICAD) battery support will be evaluated by the 9th Infantry Division High Technology Test Bed (HTTB) at Fort Lewis, Washington. (To be completed by test organization based upon scheduled field exercises.)

3.2. Each issue will be evaluated using data from operational performance tests as the primary data source for analysis. The favorable/unfavorable aspects of each issue will be considered, independent of relative weights among the issues.

3.3. Results of the analysis will be utilized to correct any shortcoming deficiencies of the POC, equipment required, and basis of issue plan. Test results are expected to provide insights for the decision process on where NICAD batteries should be recharged.

4.0. DATA SOURCE MATRIX.

<u>Issue</u>	<u>User Test*</u>	<u>Study**</u>
2.2.1.	a	b
2.2.2.	a	b
2.2.3.	a	b
2.2.4.	a	b
2.3.1.	a	b
2.3.2.	a	b
2.3.3.	a	b
2.4.1.	a	b

*User test as described in TR 71-9.

**Test data will be compared to study JWG O&O Concept depicted at Appendix A.

a - primary

b - secondary

5.0. MAJOR MILESTONES.

<u>Event</u>	<u>Date</u>
a. Independent Evaluation Plan Approved	
b. Independent Evaluation Plan Updated	
c. Outline Test Plan submitted to TSARC	
d. Test Design Plan Completed	
e. Detail Test Plan IPR	
f. Test Start	
g. Test End	
h. Test Report (draft)	
i. Test Report (final)	
q. Independent Evaluation Report	

APPENDIX A

OPERATIONAL CONCEPT FOR SEALED NICKEL-CADMIUM (NICAD) BATTERY SUPPORT

1. PURPOSE. The purpose of this paper is to provide a proposed maintenance charging concept for sealed Nickel-Cadmium (NICAD) batteries.

a. The introduction of highly sophisticated support equipment into tactical units has placed additional demands on the logistics system. Sealed Nickel-Cadmium (NICAD) batteries are required as a power source for many of the hardware systems used by both the infantry battalion and the artillery fire support team (FIST) as well as non-maneuver elements. The NICAD battery, itself, requires little or no maintenance, however, it is unable to retain an acceptable charge for long periods. As the cost of the individual NICAD battery is exceptionally high, it is impractical to consider a "throw-away" NICAD battery concept. Also, sealed NICAD batteries in storage, lose their charge at a rate which is directly proportional to ambient temperature and must be recharged.

b. Because of a real or imagined exigency for providing a proper power source for new hardware systems, some materiel developers have designed and issued nonstandard sealed NICAD batteries and NICAD battery chargers. This procedure has resulted in an unacceptable proliferation of nonstandard items in the Army supply system. Commanders have expressed concern about the complexities of logistical support for tactical hardware systems during combat operations. The significant increase in the number of hardware systems in the forward area has compounded the continuing maintenance support problem. A major problem is the need to provide a standard universal charger for sealed NICAD batteries.

c. The US Army Logistics Center has hosted a series of working conferences with representatives from USATRADOC, USAFORSCOM, USADARCOM, USAIS, USAFAS, USAOCCS, USAMMCS, USASIGS, USAADS, USAFES, USAEARA, USACERCOM, USAMSAA, USAEPADCOM, and others to review the associated problems. The conclusions and recommendations reached during these meetings provide the basis for the proposed concept. USADARCOM has recommended that the PP-7286 be considered as universal charger for sealed NICAD batteries.

2. LIMITATIONS. The following basic limitations apply:

a. The proposed battery charger (PP-7286) cannot charge the BB-287 (TOW) or the batteries of the STINGER System Tracking Head Trainer. The BB-287 requires 50 volt input which exceeds the capability of the PP-7286 charger. The TOW battery is currently supported by PP-4884 charger and will continue to be supported by the PP-4884. The Stinger Tracking Head Trainer Battery cannot be supported by the PP-7286 charger as the charger is currently configured. The Stinger system will be fielded with and supported by the PP-7309 charger.

b. Charging of sealed NICAD batteries must be performed in a temperature controlled environment for best charging results. Temperatures should not fall below 40° F or rise above 90° F.

c. Nickel cadmium batteries (vented or unvented) will not be permitted in a Lead Acid Battery Shop. In addition nickel cadmium batteries will not be stored or transported with lead-acid batteries.

d. The "throw-away" concept for lithium batteries is not feasible during peacetime and for training because of the high cost involved.

e. All personnel and equipment required to support this concept (Annex A) are over and above that currently authorized in the divisions.

3. THE OPERATIONAL CONCEPT.

a. The PP-7286 is at present considered the Universal Charger, with limited exceptions, for Army sealed NICAD batteries for the following reasons and is the charger proposed in this concept.

(1) It is fully developed and can be procured as required.

(2) It can charge all present and planned sealed NICAD batteries with the exception of the BB-287 (TOW) and the batteries used with the STINGER System Tracking Head Trainer.

(3) The PP-7286 is simple to operate.

(4) The PP-7286 has the flexibility to charge simultaneously up to 5 each, 24v batteries such as the BB-516, BB-704, BB-699/PAW-1, etc. It can also charge up to 30 AH/TAS 4/5/6 batteries simultaneously with the use of the proper adapter cable.

(5) The shelter temperature will be maintained between 40° and 90° F irrespective of outside temperatures, which can include category 7 conditions.

b. There will be three discrete shelter-mounted configurations of the sealed NICAD battery charging stations within the division. One Configuration I charging station with an analyzer capability will be available to each brigade at all times. In addition, a smaller, Configuration II charging station organized as a cellular team will be made available to the brigade during contingencies. A Configuration III charging station will be assigned to the headquarters and light maintenance company. Configurations I, II, and III are described in Annex A.

c. A Configuration I station and the operator personnel will be added to the TOE of each forward support maintenance company of the maintenance battalion. This allocation will provide sufficient charging capability to each brigade to support the charging requirements of three maneuver battalions with FIST, nonmaneuver battalion elements of the brigade, and nonbrigade elements attached to the brigade or operating in the brigade area.

d. The Configuration II charging station, organized as a TOE 29-600 series cellular team will be assigned to the forward support maintenance company as augmentation during contingencies. The equipment for the Configuration II stations will be placed in prepositioned war reserve stocks (PORS) so as to be immediately available at the onset of hostilities. This augmentation will provide back-up support to the Configuration I station and continuity of operations in the event the Configuration I station is damaged or destroyed. In addition, the Configuration II station will provide the commander the flexibility of positioning a charging capability in a remote location depending on geographical or tactical considerations.

e. In the division rear area, a Configuration III Charging Station will be provided to the headquarters and light maintenance company of the division maintenance battalion. Based upon an analysis of the charging workload in the division rear area, the headquarters and light maintenance company will be assigned either an S-280 shelter with sufficient chargers, analyzers, and adapter cables to accommodate the workload, or will be issued the required number of battery chargers, analyzers, and adapter cables for installation in another facility of the company.

f. The charging stations will operate in the same manner as a direct exchange (DX) point. Unserviceable batteries will be exchanged for recharged batteries using DA Form 2402. Batteries may be transported to and from the charging station by the same vehicle(s) drawing repair parts or recharged coolant bottles from the forward support maintenance company or by any other expedient means of transportation. Nondivisional units in the corps/COMMZ area will exchange their batteries in the same manner with their supporting DSUs.

4. The charging requirements and equipment and personnel requirements are contained in Annex A.

5. SUMMARY.

a. Most of the new generation of electronic equipment, both planned and in use, in forward areas relies on sealed NICAD batteries for power.

The sealed NICAD battery requires no maintenance, however, it is unable to retain an acceptable charge for long periods. The extended use of the electronic hardware during combat places a high demand on the battery which, in turn, results in the requirement for frequent battery changes. It has been estimated that one infantry maneuver battalion with FIST will require a total of 602 charging hours per day. In order to maintain all equipment at full operating capacity, on a continuing basis, it is necessary to provide the brigade with a dedicated battery charging station that is mobile and a second, smaller charging station must be provided as augmentation in wartime.

b. Although this concept addresses primarily the division requirements, the Configuration I charging station would also be applicable to separate brigades, armored cavalry regiments, and other brigade-sized units. In the corps and COMMZ areas, Configuration II charging stations, organized as a TOE 29-600 series cellular team, will be assigned to DS maintenance units that provide sealed NICAD battery charging support in peacetime. An additional quantity of Configuration II Charging Station equipment sets would be placed in PWRs for wartime augmentation.

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ANNEX A. Charging, Equipment and Personnel Requirements

ANNEX
CHARGING, EQUIPMENT, AND PERSONNEL REQUIREMENTS

A-1. CHARGING REQUIREMENTS. The daily estimated NICAD battery usage requirements for an infantry battalion with associated FIST are shown below:

a. FIST Requirements.

<u>End Item</u>	<u>Number in FIST</u>	<u>Batteries Per Item Per Day</u>	<u>Total Batteries Used Per Day</u>	<u>Charging Hours Per Battery</u>	<u>Charging Station Hours</u>
AM/GVS-5	9	0.5	5	6	30
ITD	9	1.8	17	6	102
GLLD	3	2.0	6	7	42
Night Sights	3	6.0	18	10	30
TOTALS	24		46		204

b. Infantry Battalion Requirements.

<u>End Item</u>	<u>Number in Battalion</u>	<u>Batteries Per Item Per Day</u>	<u>Total Batteries Used Per Day</u>	<u>Charging Hours Per Battery</u>	<u>Charging Station Hours</u>
AM/GVS-5	2	1	2	6	12
ITD	2	3	6	6	36
Night Sights	30*	7	210	10	350
TOTALS	34		218		398

*Assumes TOW will operate mounted and night sight will use vehicular power.

c. Total Requirements.

- (1) Total batteries per day: 264.
- (2) Charging station hours per day: 602.

d. Assumptions Used. Assumptions used in developing the above figures are as follows:

- (1) Batteries are charged at 70°F in a heated shelter and used at 0°F.
- (2) Requirements do not include batteries for USAF Liaison Officers, Ground Forward Air Controllers or designation of targets for HELLFIRE.

(3) Requirements assume no charger or generator downtime whatsoever.

(4) Requirements are based on 24-hr per day operation.

(5) An adapter cable is available which allows charging of 30 night sight batteries simultaneously on 1 charger, PP-7286. Additional adapter cables will be available for each type of battery supported.

A-2. EQUIPMENT REQUIREMENTS.

a. Configuration I. This configuration is based upon the above daily charging requirements of maneuver battalions, plus estimated requirements of non-maneuver battalion brigade elements and non-brigade elements operating in the brigade area. The equipment requirements listed below constitute one Configuration I charging station:

(1) One each S-280 shelter with heater, air conditioner, lights, wiring, shelving and cabinets.

(2) Twenty-five universal battery chargers, PP-7286.

(3) One each 15 KW generator, trailer mounted, PU-402/M, LIN J35424.

(4) Two each battery analyzers (to be developed).

(5) One each truck cargo, 2-1/2 ton.

(6) An appropriate number and a proper mix of battery adapter cables to be available with each Configuration I charging station.

NOTE: Each divisional forward support maintenance company will have one each Configuration I charging station authorized. Each DS maintenance company providing sealed NICAD battery charging support for ACRs, separate brigades or brigade size units will be authorized one each Configuration I charging station.

b. Configuration II. This equipment list establishes the requirement for one Configuration II charging station: (mentioned in the concept paper).

(1) One each S-250 shelter with heater, fan, lights, and wiring.

(2) Seven each universal battery chargers, PP-7286.

(3) One each battery analyzer (to be developed).

(4) One each generator set, PU-62- M, LHM J47617, consisting of 2 each 5 KW generators on trailer, B116

(5) One each truck, 4x4, 1-1/4 ton.

(6) An appropriate number and a proper mix of battery adapter cables is to be available with each Configuration II charging station.

NOTE: Each divisional forward support maintenance company is to have one each Configuration II charging station placed in prepositioned war reserve stocks (PMRS) for contingency purpose.

c. Configuration III. This charging station is to be assigned to the headquarters and light maintenance company of the division maintenance battalion. The specific equipment composition of the charging station will be determined after an analysis of the divisional rear area workload has been established. (see para 3e concept paper)

A-3. PERSONNEL REQUIREMENTS.

a. Configuration I Charging Stations. Two additional dedicated personnel are required per station. With 3 Configuration I Charging Stations per division, a total of 6 additional dedicated personnel are required for the three forward support companies.

b. Configuration II Charging Stations. Two additional dedicated personnel will be required to operate this configuration (this is a contingency requirement for divisions).

c. Configuration III Charging Stations. Two additional dedicated personnel will be required to operate this configuration.

d. Total. A total of 8 additional personnel over and above current authorizations will be required per division.

e. Maintenance. In addition to operating the charging stations, the station personnel will be responsible for operator maintenance of the vehicle, shelter, battery chargers, battery analyzer, and generators. Maintenance of the PP-7285/U will be in accordance with the USACERCOM Materiel Fielding Plan for Charger, Battery PP-7286/U dated December 1978.

f. MOS 35E has been tentatively identified as the proper skill for operator/maintainer personnel; however, this will be determined by QGPRI action.

APPENDIX B

END ITEM/SYSTEM DESCRIPTION

Functional Configuration: The PP-7286/U is a portable self-contained quasi-militarized constant current battery charger capable of charging 4.8, 6, 12, 24, or 28 volt sealed Nickel-Cadmium batteries. The charge rate, to each individual battery, is adjustable from 15 to 700 milliamperes. A meter on the front panel monitors the charge rate or battery terminal voltage for each individual channel or the condition of an internal memory 9-volt battery (B1). A digital timer on the front panel controls the charge time, which is adjustable from 0.1 to 19.9 hours. The PP-7286/U has five battery holders on the front panel with pressure contacts adjustable from 0.25 inches to 4.00 inches. Also mounted on the front panel are five sets of plug-in-connector receptacles (binding post type) for connecting sets of cables (not furnished with the charger) to batteries which do not fit into the battery holders.

A PP-7286/U System consists of: 1 each Charger, Battery, PP-7286/U, NSN: 6130-01-041-3490, LIN: B45597.

One each Battery, BA 3090/U (Battery, BA-90/U may be used at ambient temperatures above 32°F (0°C), (B1 memory battery). NSN: 6135-01-063-1978 (BA 3090/U). NSN: 6135-00-850-3177 (BA-90/U). The B1 memory battery is not shipped with the end item.

One each Case, Battery Charger, CY-7670/U.

The characteristics of the Charger, Battery PP-7286/U are:

Weight:	35 lbs
Dimensions:	9-1/2" L x 13-1/2" W x 11-3/8"H
Input:	115/230 VAC + 10%; 40-400Hz; single phase; 5 amperes (115V)
Output:	15 to 700 milliamperes; 41 VDC (max)
Charge Time:	Adjustable for automatic cutoff from 0.1 to 19.9 hours.

PAGE C1

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RUCDGD A/DRUSANZCOM RSA AL //DRCFM-HQS/DRCFM-TO M//

D. FONECON, CPT VELDHOUSE TO B. GARDNER, FM-TOW, SUBJ: PP7 B3 2

C-1

PRIORITY

CHARGER DISTRIBUTION PLAN.

E. LTR, DRCPM-GAR-1M, 22 JUL 80, SUBJ: RE-CHARGEABLE BATTERY FOR THE AN/PPC-88 RADIO.

F. LTR, ATSH-CD-MS-E, 22 AUG 80, SUBJ: FIELDING PLAN FOR NI-CAD BATTERY CHARGER (PP7236).

PAGE 03 RUMTROA1727 UNCLAS

G. FONECON, CPT VELDHUSE TO MAJ PASZTOR, XVIII CORPS, 29 OCT 80, SUBJ: CLLO DISTRIBUTION IN XVIII ACN CORPS.

H. FONECON, CPT VELDHUSE TO LTC YORK, COCSOPS, 29 OCT 80, SUBJ: LTD FIELDING.

I. MSC, ATSF-CD-MS, 142145Z NOV 80, SUBJ: PP7236 BATTERY CHARGER DISTRIBUTION PLAN.

J. MSC, ATCD-SL, 091545Z FEB 81, SUBJ: NI-CAD BATTERY SUPP

K. MSC, ATCL-FO, 261410Z NOV 80, SUBJ: BATTERY CHARGER DISTRIBUTION PLAN.

L. MEETING, LOCCEN, 28 JAN 81, SUBJ: FIELDING OF PP7236 CHARGERS.

M. MSC, ATSF-CD-MS, 171945Z FEB 81, SUBJ: RECOMMENDED PP7236 BATTERY CHARGER DISTRIBUTION PLAN.

N. MEETING, XVIII CORPS/FAS, 18-19 FEB 81, SUBJ: COPPERHEAD/CLLO USER'S CONFERENCE.

O. FONECON, MR. MCCREARY (LOCCEN) TO CPT WILEY (FAS), 270830Z FEB 81, SUBJ: RECOMMENDED PP7236 DISTRIBUTION PLAN CONCURRENCE.

1. THE PURPOSE OF THIS PP7236 DISTRIBUTION PLAN IS TO PROVIDE THE ARMY WITH A INTERIM SEALED NI-CAD BATTERY CHARGING CAPABILITY UNTIL SUCH TIME AS A CENTRALIZED CHARGING CONCEPT (REF A) IS IMPLEMENTED. THIS INTERIM CHARGING CONCEPT IS INTENDED TO SUPPORT SEALED NI-CAD

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BATTERY CHARGING REQUIREMENTS THROUGH 10FY94, THE ANTICIPATED AVAILABILITY DATE OF THE CENTRALIZED BATTERY CHARGING STATION.

2. USAFAS TASKED (REF B) ALL TRADOC SERVICE SCHOOLS TO IDENTIFY ALL SYSTEMS THAT WOULD REQUIRE SEALED NI-CAD BATTERY CHARGING THROUGH 10FY94. AS A RESULT THE FOLLOWING ITEMS WERE IDENTIFIED: AN/PSG-2 (DMD), AN/GVS-5 (HHLR), AN/PAG-01 (LTD), AN/TVC-2 (CLLO), AN/TAS-4 (TNS), AN/TAS-5 (DNT), AN/TAS-6 (NOOLR), AND AN/PPC-88 (SUT).

3. TRADOC CONTINUES TO SUPPORT THE CENTRALIZATION OF THE PP7236 BATTERY CHARGERS AT THE SUPPORTING MAINT (OS) UNITS (REF A&L), IN ORDER NOT TO BURDEN THE MANEUVER UNITS WITH ADDITIONAL LOGISTICAL PROBLEMS.

4. NO ADDITIONAL PERSONNEL OR EQUIPMENT (REF C) WILL BE AUTHORIZED TO SUPPORT THE INTERIM BATTERY CHARGING OPERATION.

5. WARTIME USAGE RATES IN A 5 TO 39 DEGREES CENTIGRADE ENVIRONMENT WAS USED TO DETERMINE THE DAILY BATTERY REQUIREMENTS FOR EACH SYSTEM.

6. IN REF E, PM-SINGARS IDENTIFIED THE AVAILABILITY OF A RE-CHARGEABLE NI-CAD BATTERY FOR THE AN/PPC-88 (SUT). IN REF F, USAIS INDICATED THAT THE DECISION TO USE THE RE-CHARGEABLE NI-CAD BATTERY

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PAGE 01

CC A1 I1	CCO A1 I1	SD A1 I1	FE A1 I1	DVD A2 I1	APC A1 I1	SUPVR
DA A1 I1	DP A1 I1	-----	CH A1 I1	CCD A2 I1	YSA A1 I1	M/R
PA A1 I1	LG A2 I2	AG A1 I1	FM A1 I1	COY A2 I1	ALMC A1 I1	OTC
DO A3 I3	DCN A1 I1	SSS A1 I1	CP A1 I1	DDE A2 I1	LOCC A3 I1	SSO 1
CS A3 I3	BS A2 I2	PAO A1 I1	EE A1 I1	FP A2 I1	SEFO A1 I1	ADD 1
SE A1 I1	AC A1 I1	IG A1 I1	CM A4 I1	FH A2 I1	FFSA A1 I1	
WE A1 I1	DE A1 I1	DPCA A3 I1	IS A1 I1	ACC/CF A1 I1	CSC A1 I1	RTR-1
SP A1 I1	ADS A2 I2	DIO A2 I1	JA A1 I1	KAH/MO A2 I2	CID A1 I1	
DI A1 I1	JA A1 I1	PTS A2 I1	DOE A2 I1	-----	CCRF I4	CKP----

FTTUZYUW RUWTR0A1728 C581525-UUUU--RUECAGA.

7NF UUUUU

P 271431Z FEB 81

FM CDR USAFACFS FT SILL OK //ATSF-CD-MS//

TO RUEADND/DA WASH DC //DAMO-RCA//

RUCLAIA/CDRTRADCC FT MONROE VA //ATCO-FA/ATCO-CMS//

INFC RUECAGA/CDR USALOGC FT LEE VA //ATCL-CFM//

RUWTFHA/CDR CACCA FT LEAVENWORTH KS //ATZL-CA-COF//

RUCLHTE/CDRFRSCOM FT MCPHERSON GA //AFOP-CM//

RUFDAAA/CINCUSAREUR HEIDELBERG GF //AEACC-FMD//

RUCLONA/CDR USAIS FT BENNING GA //ATSH-CD-MS-E//

RUCLPAA/CDR USAARMC FT KNOX KY //ATZK-CD-MS//

RUCLAKA/CDR USAIMA FT BRAGG NC //ATSU-CD-MO//

RULNAPG/CDR USAOCCS APS MO //ATSL-CD-CR/ATSL-CD-MS//

RUECFUA/CDR USAES FT BELVOIR VA //ATZA-CD-M//

RUWTKDA/CDR USAADC FORT BLISS TX //ATSA-CD-MS-M//

RUCLUUA/CDR USAAVNS FT RUCKER AL //ATZG-D//

RUWJHQA/CDRUSATCS FT HUACHUCA AZ //ATSI-TE-CD//

RUCLBWA/CDRNPSTC FT MCCLELLAN AL //ATZN-MF-COM/CM-COM//

RUCLDIA/CDRUSASCCS FT GORDON GA //ATZH-CD-SO//

RUCLUJA/CDRUSATC FT EUSTIS VA //ATSP-CD//

RUCCGDA/DRUSAMICOM RSA AL //DRCPM-HDS/DRCPM-TOM//

PAGE 02 RUWTR0A UNCLAS

RUCLFUA/CDRERADCOM FT BELVOIR VA //DELET-PE//

RUCDBIA/CDRCORADCOM FT MONMOUTH NJ //DELET-PE/DRCPM-TE//

RUCLRNB/CDRNRSA LEX KY //DRXMD-ED//

RUCLAKA/CDR XVIII CORPS FT BRAGG NC //AFZA-FAS/AFZA-DPT-ED//

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IS STILL PENDING. ALSO, WITH THE HIGH DENSITY AND BATTERY CONSUMPTION RATE (4 PER DAY) FOR THE AN/PRC-68, RE-CHARGING WOULD BECOME A MONUMENTAL TASK (1000 CHARGING HOURS PER BDE PER DAY). THUS, AN/PRC-68 (SUT) BATTERY RE-CHARGING WAS NOT INCLUDED IN THIS PLAN. SUFFICIENT PF732 CHARGERS HAVE BEEN ISSUED TO SATISFY AN/TAS-4 (TOW), AN/TAS-5, AND AN/TAS-6 CHARGING REQUIREMENTS, SO THESE ITEMS WERE ALSO NOT INCLUDED IN THIS DISTRIBUTION PLAN. THE AN/TAS-4 (GLD)

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BATTERY WILL BE RECHARGED WITH THE PP7235 CHARGER.

7. THIS BATTERY CHARGER DISTRIBUTION PLAN IS DESIGNED TO SUPPORT COMBAT FIELD OPERATIONS. IN PEACETIME, GEOGRAPHIC UNIT LOCATION NORMALLY DETERMINES WHICH SUPPORT MAINT MAINTAINS A SPECIFIC UNIT'S EQUIPMENT. AS A RESULT, SOME INTRA-MAINT UNIT SHUFFLING OF CHARGERS

PAGE 03 RUWTR041723 UNCLAS

MAY BE REQUIRED TO SUPPORT PEACETIME TRAINING OPERATIONS AND EXERCISES.

8. LOGCEN, FT LEE, VA (REF O) GAVE CONCURRENCE WITH THIS DISTRIBUTION PLAN. THIS PLAN REFLECTS THE LATEST DISTRIBUTION OF EQUIPMENT WITHIN THE XVIII ABN CORPS (REF N).

9. THIS PP7235 DISTRIBUTION PLAN IS BASED ON THE LATEST DMD, GVS-5, LTD, AND GLLO FIELDING SCHEDULES. THE BASIS OF ISSUE IS BASED ON THE FOLLOWING EQUIPMENT-CHARGER RATIOS:

EQUIPMENT
DMD

CHARGER POI

4 CHARGERS PER FA BN

4 CHARGERS PER DIVARTY (GS BN, TAB

1 CHARGER PER FA BDE HQ

1 CHARGER PER FA BDE, GS BN

1 CHARGER PER 40

1 CHARGER PER 11

1 CHARGER PER 7.5

1 CHARGER PER 30 (ARM, MECH INF, ACP)

1 CHARGER PER 12 (INF, ABN, ATQ ASSLT)

GVS-5

LTD

GLLO

TAS-4 (GLLO)

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10. INTERIM DISTRIBUTION PLAN:

PRI	UNIT (TOE)	DMD	GVS-5	LTD	GLLO	TAS-4	TOTAL
1	TRADOC (FEB 81)						
	USAFAS	4	9		1	1	14
	USAIS		1				1
	USAIMA		2	3			5
PRI	UNIT (TOE)	DMD	GVS-5	LTD	GLLO	TAS-4	TOTAL
	USAARMC		1				1
	USAOCS		1		1		2
	USAES		1				1
	7ATC	4	1		1		6
2	1ST CAV DIV (FEB 81)						
	1 BDE (29-037H)	4					4
	2 BDE (29-037H)	4					4
	3 BDE (29-037H)	4					4
	REAR AREA (29-036H)	4					4
3	212 FA BDE (FEB 81)						
	BDE HHQ (29-137H)	.9					1
	FA BN (29-137H)	.9					1

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	FA BN (29-137H)	.9					1
	PAGE 05 RUWTR041728 UNCLAS						
	FA BN (29-137H)	.9					1
	FA BN (29-137H)	.9					1
4	1ST INF DIV (APR 81)						
	1 BDE (29-027H)	4					4
	2 BDE (29-027H)	4					4
PRI	UNIT (TCE)						
	PEAR AREA (29-02FH)						
5	XVIII FA BDE (APR 81)						4
	BDE HHB (29-008H)						
	FA BN (29-027H)		.1		.9	.6	2
	FA BN (29-027H)		.1		.9	.6	2
	FA BN (29-027H)		.1		.9	.6	2
6	82 ASN DIV (APR 81)						
	1 BDE (29-058H)		1.2	1.6			3
	2 BDE (29-058H)		1.2	1.6			3
	3 BDE (29-058H)		1.2	1.6			3
	PEAR AREA (29-058H)		.7	.6	1.7	1.1	5
7	8 INF DIV (JUN 81)						
	1 BDE (29-027H)	4	1.3		1.2	.3	7
	2 BDE (29-027H)	4	1.3		1.2	.3	7
	PAGE 06 RUWTR041728 UNCLAS						
	3 BDE (29-027H)	4	1.2		1.2	.3	7
	PEAR AREA (29-02FH)	4	1.2		1.2	.3	7
8	101ST AR ASL (JUN 81)						
	1 BDE (29-087H)		1.3		1.2	.3	4

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PAGE 01

CC A1 I1 CDE A1 I1 SD A1 I1 FE A1 I1 DTD A2 I1 APG A1 I1 SUGV
DA A1 I1 DP A1 I1 ----- CH A1 I1 DCD A2 I1 TSA A1 I1 M/R
SA A1 I1 LG A2 I2 AG A1 I1 FM A1 I1 DDT A2 I1 ALMC A2 I1 CIC
DO A3 I3 CON A1 I1 SGS A1 I1 CP A1 I1 BDE A2 I1 LOGC 43 I1 SDO 1
CS A3 I3 SS A2 I2 PAO A1 I1 EE A1 I1 FP A2 I1 GFFO 41 I1 ADO 1
SE A1 I1 AC A1 I1 IG A1 I1 CM A4 I1 FH A2 I1 FESA A1 I1
WE A1 I1 DE A1 I1 OFCA A3 I1 IS A1 I1 ACC/CF A1 I1 CDC A1 I1 RTR-4
SP A1 I1 ADS A2 I2 DIO A2 I1 JA A1 I1 KAH/MO A2 I2 CID A1 I1
DI A1 I1 JA A1 I1 FTS A2 I1 DDE A2 I1 ----- CGRF I4 CKR---
PTTUZYUW RUWTR0A1729 0591525-UUUU--RUEOAGA.
7NR UUUUU

F 271431Z FEB 31

FM CDR USAFACFS FT STILL OK //ATSF-CO-MS//

TO RUEADWD/CA WASH DC //DANC-RGA//

RUCIAIA/CDRTRADOC FT MONROE VA //ATCD-FA/ATCD-MS//

INFO RUECACA/CDR USALOGC FT LEE VA //ATCL-CFM//

RUWTFHA/CDR CACDA FT LEAVENWORTH KS //ATL-CA-COF//

RUCLEHT/CDRFORSCOM FT MCPHERSON GA //AFOP-CM//

RUEBAAA/CINUSAREUR WEIDELBERG GE //AEAGC-FMO//

RUCLONA/CDT USAIS FT BENNING GA //ATSH-CO-MS-E//

RUCIBAA/CDR USAARMC FT KNOX KY //ATZK-CO-MS//

RUCLEKA/CDT USAIMA FT BRAGG NC //ATSU-CO-MC//

RULNAPC/CDR USAOCCS APG MD //ATSL-CO-CR/ATSL-CO-MS//

RUECFUA/CDT USAES FT BELVOIR VA //ATZA-CO-M//

RUWTKOA/CDR USAADC FORT BLISS TX //ATSA-CO-MS-M//

RUCLEUA/CDR USAAVNS FT RUCKER AL //ATZO-D//

RUWJHRA/CDRUSAGCS FT HUACHUCA AZ //ATSI-TE-CO//

RUCLEWA/CDRMPSTC FT MCCLELLAN AL //ATZN-MP-CO/CN-COM//

RUCLEDA/CDRUSAGCS FT CORDON GA //ATZH-CO-SO//

RUCLEJA/CDRUSATC FT FUSTIS VA //ATSP-CO//

RUCDQDA/DRUSANICOM RSA AL //DRCPM-HDS/DRCPM-TO M//

PAGE 02 RUWTR0A UNCLAS

RUECFUA/CDRERADCOM FT BELVOIR VA //DELET-PE//

RUEOBIA/CDRCGRADCOM FT MONMOUTH NJ //DELET-PE/DRCPM-TF//

RUCLEHB/CDRMRSA LEX KY //DRXMO-FD//

RUCLEKA/CDR XVIII CORPS FT BRAGG NC //AFZA-FAS/AFZA-DPT-CO//

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PRI	UNIT (TCE)	DMO	GVS-5	LTD	SLLD	TAS-4	TOTAL
	2 CDE (29-087H)		1.3		1.2	.8	4
	3 BDE (29-087H)		1.3		1.2	.8	4
	REAR AREA (29-035H)		1				1
9	1 BDE (29-017H)	4	1.1		1.1	.7	7
	2 BDE (29-017H)	4	1.1		1.1	.7	7

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	3 BDE (29-017H)	4	1.1		1.1	.7	7
	REAR AREA (29-016H)	4	.9		.8	.5	7
10	24 INF DIV (AUG 81)						
	1 BDE (29-027H)		1.2		1.2	.3	3
	2 BDE (29-027H)		1.2		1.2	.3	3
PAGE 03 RUWTR0A1729 UNCLAS							
	REAR AREA (29-026H)		1		.8	.2	2
11	194TH AR BDE (SEP 81)						
	BDE (29-027H)	4	1.1		1.3	.4	7
12	20 ACR (OCT 81)						
	ACR (29-203H)	3	2.1		1.6	.4	8
13	11TH ACR (OCT 81)						
	ACR (29-203H)	3	2.1		1.6	.4	8
PRI	UNIT (TOE)	DMD	GV5-5	LTD	CLL7	TAS-4	TOTAL
14	1ST AR DIV (NOV 81)						
	1 BDE (29-037H)		1.3		1.2	.3	3
	2 BDE (29-037H)		1.3		1.2	.3	3
	3 BDE (29-037H)		1.2		1.2	.3	3
	REAR AREA (29-036H)		1.2		1.2	.3	3
15	20 AR DIV (FWD) (DEC 81)						
	BDE (29-027H)	4	1.2		1.2	.3	7
16	41ST FA BDE (JAN 82)						
	BDE HH3 (29-203H)	.9					1
	FA BN (29-203H)	.9	.1				1
	FA BN (29-203H)	.9	.1				1
	FA BN (29-203H)	.9	.1				1
PAGE 04 RUWTR0A1729 UNCLAS							
17	4TH INF DIV (FWD) (JAN 82)						
	BDE (29-203H)	4	1.2		1.2	.3	7
18	30 AR DIV (AUG 82)						
	1 BDE (29-037H)	4	1.4		1.2	.3	7
	2 BDE (29-037H)	4	1.2		1.2	.3	7
	3 BDE (29-037H)	4	1.1		1.2	.3	7
PRI	UNIT (TOE)	DMD	GV5-5	LTD	CLL7	TAS-4	TOTAL
	REAR AREA (29-036H)	4	1.3		1.2	.3	7
19	2 BN 31 FA (MAY 83)						
	FA BN (29-207H)	.9	.1				1
20	420 FA BDE (MAY 83)						
	BDE HH3 (29-427H)	1					1
	FA BN (29-427H)	1					1
	FA BN (29-427H)	1					1
21	III CORPS FAS (AUG 83)						
	FAS (29-137H)	.1					1
22	20 AR DIV (FWD) (AUG 83)						
	BDE (29-027H)	4	1.2		1.2	.3	7
23	30 INF DIV (AUG 83)						

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1 BDE (29-027H)	4	1.5		6
PAGE 05 RUMTROA1729 UNCLAS				
2 BDE (29-027H)	4	1.2		6
3 BDE (29-027H)	4	1.2		6
PEAR AREA (29-027H)	4	1.2		6
24 3D AP DIV (OCT 83)				
1 BDE (29-037H)	4	1.4	1.2 .3	7

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TOE	PARA	MOS	AVAIL FWR GEN
29-016H	08	35E(5)	J35829(2), J35913(1)
29-017H	06	35E(1)	J42100(2)
29-026H	08	35E(5)	J35629(4), J35913(1), J42100(3), J45836(1)

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29-027H	07	35E(2)	J35913(1), J42100(3)
29-036H	08	35E(4)	J35913(1), J35913(4), J35933(4), J42100(2), J45836(1)
29-037H	06	35E(3)	J35813(1), J42100(4), J45836(1)
29-059H	05	35E(3)	J42100(2), J43013(1)
29-036H	12	35E(4)	J42100(2)
29-087H	05	35E(4)	J42100(1)
TOE	PARA	MOS	AVAIL FWR GEN
29-137H	01	520(4)	J35835(3), J35901(1), J49338(6)
29-207H	13	520(1)	J49393(1)
29-208H	12	35E(9)	J35629(2)
29-247H	06	35E(1)	J35813(1), J42100(4), J45836(2)
29-427H	11	35E(1)	J35629(5)

12. USAFAS POC IS CPT WILEY, AUTOVON. 639-2269.

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APPENDIX D

TRAINING AND NEW EQUIPMENT

Training. Due to the simplicity of this item and its circuit similarity to the equipment presently taught in the MOS 35E resident training course, no additional training, other than the technical manuals, are required. (This position was concurred in by TRADOC, ATTSC-DS-MS and US Army Engineer School ATZA-TDI-C.)

New Equipment Training. New equipment training will not be required to field the PP-7286/U due to the simplicity of the equipment which does not entail any critical operational or maintenance tasks for the operator or the MOS 35E Special Electrical Devices Repairer. (This position was concurred in by TRADOC, ATTSC-DS-MS.)

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